Pine-Hardwood Mixtures for Biodiversity on the Savannah River Site

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Regeneration of pine-hardwood mixtures is attractive to many forest managers since it is inexpensive and uses low intensity site preparation. These mixtures may play a role in maintaining diversity by increasing the number of niches and microhabitats, but this topic has not been studied.

A study was installed on the Savannah River Site to examine the role of pine-hardwood regeneration in maintaining or enhancing diversity. Study objectives are: 1) to document changes to floral and faunal alpha diversity when pine-hardwood stands are regenerated using currently recommended techniques, 2) to examine variations to recommended regeneration techniques that may better maintain or enhance floral and faunal diversity, and 3) to develop prescription guidelines for site-preparation burning that will ensure long-term site productivity.

The fell-and-burn technique is commonly recommended for regenerating stands to pine-hardwood mixtures. This technique has 3 steps: 1) spring felling of residual stems after a commercial clearcut, 2) summer broadcast burning, and 3) planting pine at a wide spacing. This study will examine variations to each of these procedures.

Six stands (or replicates) were selected for study. Three stands were harvested in 1990 and three will be harvested in 1991. Near equal portions of each stand will harvested by treatments designed for the companion study by James A. McMinn (see previous abstract). Harvesting treatments include commercial and silvicultural clearcuts conducted during the growing season and during the dormant season.

Site preparation and regeneration treatments will be installed on approximately half of each harvest treatment area. In those replicates harvested in 1990, site preparation treatments include combinations of 3 levels of summer burning (no burn, low severity burn, and high severity burn) and 2 types of pine regeneration (planting and direct seeding). Natural regeneration of pine will be studied in all treatment areas to be harvested in 1991. Site preparation treatments will include prescriptions designed to produce fires of low, medium, and high severity.

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